

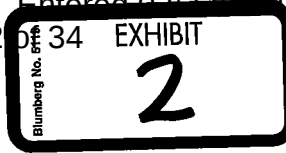


Valleycrest Landfill Site
Cost Incurred on RI/FS Subsequent to GM Failure to Pay
Through Present

	2Q09	3Q09	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	TOTALS
Cargill (6.75%)	\$18,802	\$21,176	\$20,169	\$6,941	\$16,920	\$12,045	\$7,244	\$26,222	\$129,519
TRW/Kelsey Hayes (6.75%)	\$18,802	\$21,176	\$20,169	\$6,941	\$16,920	\$12,045	\$7,244	\$26,222	\$129,519
Standard Register (6.75%)	\$18,802	\$21,176	\$20,169	\$6,941	\$16,920	\$12,045	\$7,244	\$26,222	\$129,519
NCR (6.75%)	\$18,802	\$21,176	\$20,169	\$6,941	\$16,920	\$12,045	\$7,244	\$26,222	\$129,519
Flowserve/Durion (3.375%)	\$9,401	\$10,588	\$10,085	\$3,470	\$8,460	\$6,023	\$3,622	\$13,111	\$64,760
Globe (1.6875%)	\$4,700	\$5,294	\$5,042	\$1,735	\$4,230	\$3,011	\$1,811	\$6,555	\$32,378
SUBTOTAL	\$89,309	\$100,586	\$95,803	\$32,969	\$80,370	\$57,214	\$34,409	\$124,554	\$615,214
General Motors (21.9375%)	\$61,106	\$68,822	\$65,550	\$22,557	\$54,991	\$39,148	\$23,544	\$85,220	\$420,938
Waste Management (46%)	\$104,959	\$99,940	\$93,999	\$16,888	\$78,289	\$47,654	\$28,812	\$149,782	\$620,323
TOTAL	\$255,374	\$269,348	\$255,352	\$72,414	\$213,650	\$144,016	\$86,765	\$359,556	\$1,656,475

Cost Incurred on RI/FS Subsequent to GM
Failure to Pay Through Present: \$1,656,475
Cost to Complete Matters through pre-
RD/RA: \$1,003,910

TOTAL \$2,660,385



CLAIM VALUATION

RDRA CLAIMS

In the VLSG's original proof of claim submitted November 24, 2009, the cost estimate for the worst case remedial option was \$55,935,000. We indicated to Old GM's claims manager, Alix Partners, that this was a preliminary number and that additional changes would be forthcoming from the USEPA and OEPA which would likely increase the cost estimates. Alix Partners asked us to provide a memo to them regarding our claim when the remedial options were closer to finalization.

Over the last few months, USEPA and OEPA have required numerous changes to the remedial alternatives to be considered for the Valleycrest Site. As we indicated to Mr. Neis and Mr. Goslin of Alix Partners in our most recent telephone call, USEPA and OEPA within the last two months have expanded the remedial alternatives to be considered in the RDRA process to address the possibility that extracted leachate and groundwater would have to be addressed via on-site treatment and discharge to an on-site infiltration impoundment or transportation to an off-site commercial facility for treatment and disposal. As a result, the VLSG recently was required to submit a revised draft Feasibility Study to USEPA and OEPA which contained cost estimates for these new remedial elements – i.e., on-site and off-site groundwater and leachate treatment and disposal.

Prior to these most recent changes, all of the remedial alternatives that were included in the feasibility study were premised on the extracted leachate and groundwater from the Site being discharged into the City of Dayton's publically-owned treatment works ("POTW"), thus eliminating the necessity of the on- or off-Site leachate and groundwater treatment and disposal methods referred to above.

However, USEPA has now determined that, since it is possible for various reasons, that the City POTW may not allow the discharge of the leachate and groundwater into its system, the array of remedial alternatives for the Site must now include the possibility of treatment and disposal of contaminated leachate and groundwater on and off the Site via the above-referenced methods. In addition, within the last two weeks, OEPA has required the VLSG to consider changes to leachate and groundwater extraction model which results in yet another remedy cost estimate.

Accordingly, the remedial cost estimates submitted by the VLSG to USEPA and OEPA in the just issued draft Feasibility Study incorporates these on- and off-Site leachate and groundwater treatment and disposal methods. The new cost estimates in the draft Feasibility Study are \$28,447,784 for the lowest cost remedy and \$104,722,141 for the highest cost remedy. (See Ex. A, p. 10 and p. 11 of Appendix J of the draft Feasibility Study submitted by the VLSG to USEPA and OEPA on January 17, 2011.) These numbers are based on a 7% NPV discount rate and include no Agency oversight costs during the implementation of the Remedy. Our previous remedy proofs of claim estimates used the more appropriate factors of 2.7% NPV and estimated future Agency oversight costs at 9%.¹ Utilizing these factors the resulting current remedy

¹ This 9% factor is based on the Site's actual oversight cost experience.

estimates range from \$38,052,126 (\$38 million) for the lowest cost Remedy 3(a) and \$173,756,588 (\$174 million) for the highest cost remedy (3b). (See Ex. B)

Although far from certain, we believe that a remedial alternative will be chosen which includes the discharge of the extracted groundwater and leachate into the Dayton POTW (i.e. either 2(b) or 3(b)). Accordingly, we have selected Remedy 2(b) which is the highest cost remedial alternative utilizing the POTW as our base claim². Remedy 2(b) is currently estimated to cost \$50,460,529 (\$51 million rounded). (See Ex. B) This remedial alternative is based on a 2.7% NPV, 9% agency oversight cost, an ARARS compliant solid waste cap and extraction of leachate and groundwater with disposal in the City of Dayton's POTW. However, if the City of Dayton does not allow the discharge of leachate and groundwater into its POTW, the highest cost remedial alternative 3(b) would require extracted leachate and groundwater to be treated and disposed of at an off-site commercial treatment facility.³ The estimated cost for this remedy including the off-site treatment and disposal is \$173,756,586 (\$174 million rounded).⁴

Based on discussions with the City of Dayton representative this past Tuesday (January 25, 2011) during our dispute resolution meeting, this \$174 million remedy, although not certain to be required, is a real possibility at this Site. Accordingly, this risk must be reflected in some manner in the remedial cost estimate by means of a probability factor to prevent the VLSG and USEPA from substantially understating their RDRA claims. The VLSG's Technical Consultants de maximis and CRA have indicated that the probability of the \$174 million remedy being required is 20%. Accordingly, the estimated cost of the remedy at this Site utilizing this probability factor of 20% is as follows:

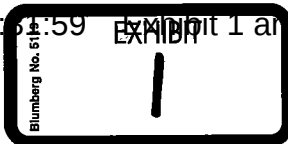
\$174,000,000
x 20%
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\$ 34,800,000
\$ 51,000,000
x .8
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40,800,000
+ 34,800,000
<hr/>
\$ 75,600,000

This remedial cost estimate of \$75.6 million is what the VLSG believes should be utilized in any Valleycrest RDRA proof of claim in the Old GM bankruptcy.

² Rather than using a proof of claim methodology utilizing the average between the highest (\$174 million) and lowest (\$38 million) cost remedies or other such cost estimate methods which would result in a substantially higher proof of claim, our consolidated claim is instead based on the 2(b) POTW remedy estimated at \$50.5 million.

³ Please note that Dayton and Montgomery County have gone on record that the more reasonable cost 1 remedial alternative of on Site treatment and disposal is not likely to receive a permit because of the location of Site in relation to the Dayton Drinking Water Aquifer. (See Ex. C)

⁴ OEPA in its latest comments on the leachate and groundwater extraction rate model has proposed that Remedy 2(b) include a higher extraction rate than currently utilized in the 2(b) Remedy presented in the feasibility study. The VLSG has filed for Informal Dispute Resolution on this issue. However, if this change is adopted, the worst case 2(b) Remedy would increase in cost by \$5 million to \$179 million.



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MEMORANDUM

TO: File REF. NO.: 016816-05

FROM: Ian K. Richardson/John Buyers/ev/357 DATE: January 17, 2011

RE: Remedial Action Cost Estimates
North Sanitary Landfill, Dayton, Ohio

1.0 INTRODUCTION

The purpose of this memorandum is to present remedial action cost estimates for the four site-wide comprehensive remedial alternatives assembled in the Feasibility Study (FS) Report for the North Sanitary Landfill in Dayton, Ohio (CRA, 2011). As stated in Section 6.2.3.7 of "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (USEPA, October 1988), cost estimates for remedial alternatives need to consider capital costs [direct (construction) and indirect (nonconstruction and overhead)], annual operation and maintenance (O&M) costs, and the net present value (NPV) of capital and O&M costs. This memorandum also considers periodic costs (e.g., costs associated with 5-year reviews).

Consistent with USEPA (1988) and "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study" (USEPA, July 2000), the cost estimates presented in this memorandum are believed to provide an accuracy of +50 percent (percent) to -30 percent as cost estimates at the FS stage are considered to be "order-of-magnitude". The cost information presented in this memorandum is based on:

- CRA and VLSC experience with sites in a similar area, of a similar nature, and similar remedial actions
- Information obtained in March 2009 from a vendor (Gundle/SLT Environmental, Inc.) of manufactured capping materials including geosynthetic clay liner (GCL), flexible membrane liner (FML), and geosynthetic drainage net (GDN)
- Sanitary sewer discharge rates obtained from the City of Dayton (City, see Attachment A)

Unit costs were employed equally in costing all remedial alternatives.

This memorandum is structured as follows:

Section 1.0	Introduction
Section 2.0	Estimated Capital Costs
Section 3.0	Estimated Annual O&M Costs
Section 4.0	Estimated Periodic Costs
Section 5.0	Groundwater Contingent Remedies
Section 6.0	Summary
Section 7.0	References

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2.0 ESTIMATED CAPITAL COSTS

Estimated capital costs for addressing media are discussed in the following sections:

- Section 2.1 Waste and Off Property Buried Waste Area (OPBWA) Soil
- Section 2.2 NAPL
- Section 2.3 Leachate
- Section 2.4 Landfill Gas
- Section 2.5 Groundwater

2.1 WASTE AND OPBWA SOIL

For waste and OPBWA soil, the remedial alternatives include:

- Relocation of Disposal Area 4 waste to be used as the grading fill and engineered subbase or bedding layer to produce an approximately 3 percent minimum slope over the remaining areas to be capped, with simple grading of the resulting Disposal Area 4 excavation to blend with existing surrounding areas and vegetated
- OPBWA waste and soil consolidation into Disposal Area 1
- Capping Disposal Areas 1, 2, 3, and 5 with either a solid waste (SW) cap (Alternatives 2a and 2b) or an alternate SW cap (Alternatives 3a and 3b)
- On-site stormwater management
- Re-establish road to residential properties

It is estimated that the relocation of Disposal Area 4 waste to be graded over the remaining disposal areas, and simple grading of the resulting Disposal Area 4 excavation, could be performed at a unit rate of \$10/cy. Based on the estimated 153,708 cubic yards (cy) of waste and cover material in Disposal Area 4, the estimated cost of the waste relocation work is \$1,537,080. Post-excavation sampling would be performed in Disposal Area 4 to confirm that any direct-contact risk had been addressed. The estimated cost of the post-excavation sampling is \$25,000.

The estimated cost for OPBWA waste and soil consolidation into Disposal Area 1 is \$7,650 (i.e., 765 cy x \$10/cy). The estimated cost of the post-excavation sampling is \$2,000.

Two cap design options have been identified for Disposal Areas 1, 2, 3, and 5, including an SW cap and an alternate SW cap (see Figure 4.2 of the FS Report). If an SW cap is selected, then an engineered subbase (minimum 12 inches) will be needed. If instead an alternate SW cap is selected, then a bedding layer (minimum 6 inches) will be needed. It was assumed that the Disposal Area 4 waste material (foundry sand) will satisfy the requirements for engineered subbase as established in OAC 3745-27-08(D)(22) and the requirements for a bedding layer. On-site screening of the Disposal Area 4 materials could be undertaken, if needed.

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As shown in Table 1, the area to be capped is 3,020,874 ft². If an SW cap is selected and a minimum 12-inch engineered subbase is thus required, then 3,020,874 ft³ or 111,884 cy of engineered subbase material would be needed. If instead an alternate SW cap is selected and a minimum 6-inch bedding layer is thus required, then 1,510,437 ft³ or 55,942 cy of bedding layer material would be needed. As the estimated amount of material available in Disposal Area 4 (153,708 cy) exceeds these amounts, no imported engineered subbase or bedding layer material is expected to be needed. In order to achieve the approximate desired cap slope while also meeting minimum requirements for engineered subbase or bedding layer thickness, the Disposal Area 1, 2, 3, and 5 waste would need to be contoured for drainage and then the Disposal Area 4 material laid on top of the contoured waste.

Capital cost estimates for capping are shown in Table 1. Installed unit rates for vegetated layer (\$25/cy), cap protection layer (\$18/cy), and soil drainage layer (\$20/cy) are based on CRA experience with previous projects. Installed unit rates for GCL (\$0.65/ft²), FML (\$0.70/ft²), and GDN (\$0.65/ft²) are based on pricing obtained from Gundle/SLT Environmental, Inc. The estimated cost to construct the SW cap is \$9.8M and the estimated cost to construct the alternate SW cap is \$6.6M.

Three other potential SW cap designs are possible within OAC 3745-27-08 with slope variance, by varying the type of drainage layer (GDN or soil drainage layer) and by varying the type of low permeability clay layer (recompacted clay or GCL). It is recognized that these designs are not identified in the FS Report; however, the estimated costs for these other potential designs (also shown in Table 1 for information purposes) were used as the basis for favoring the particular SW cap design identified in the FS Report. The installed unit rate for low permeability clay layer (\$25/cy) is based on CRA experience with previous projects. The installed unit rate for GDN (\$0.65/ft²) is based on pricing obtained from Gundle/SLT Environmental, Inc. As shown in Table 1, the estimated cost for these other potential designs ranges from \$11.5M to \$13.7M, relative to the \$9.8M estimated cost for the SW cap design identified in the FS Report.

No costs were included for excavation, treatment, or disposal of hazardous material during cap construction. No costs were included for management of isolated wetlands during cap construction.

An estimated \$250,000 was included for stormwater management facilities, primarily for facilities that may be needed to direct Disposal Area 1 stormwater over to the existing borrow area.

The complete length of Valleycrest Drive is approximately 2,500 feet, of which an approximate 1,200-foot currently closed length would be re-opened to facilitate access to the five residences near the north (dead end) of Valleycrest Drive. The remedial action cost estimates are based on street standards provided by the City on September 24, 2010 for "Bituminous Street Pavement (Normally Residential Type Streets)" (see Attachment B); however, the actual design would be determined during RD. As shown below, the estimated cost to re-open Valleycrest Drive is \$180,750.

	<i>Item</i>	<i>Unit</i>	<i>Estimated Quantity</i>	<i>Unit Price</i>	<i>Estimated Cost</i>
1.	Pavement Removal	yd ²	5,000	\$5	\$25,000
2.	Gravel Base	yd ³	1,400	\$40	\$56,000
3.	Asphalt	ton	850	\$75	\$63,750
4.	Curb	ft	2,400	\$15	\$36,000
				Total	\$180,750

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2.2 NAPL

An estimated \$25,000 was included in all remedial alternatives to allow for -installation of NAPL recovery wells and container systems at NSL-54L and NSL-55L.

2.3 LEACHATE

The FS Report presents a proposed leachate extraction system concept that includes up to approximately 35 leachate extraction wells that may be installed, including 28 dual-phase (i.e., leachate and LFG) extraction wells and seven single-phase (i.e., leachate only) extraction wells. It was assumed that the extraction wells would be connected via a leachate forcemain network over to the western side of the site. As shown below, the estimated cost to install such a system is \$794,750.

	<i>Item</i>	<i>Unit</i>	<i>Estimated Quantity</i>	<i>Unit Price</i>	<i>Estimated Cost</i>
1.	Installation of -35 extraction wells				
	i) Structural costs (HDPE)*	each	35	\$10,850	\$379,750
	ii) Mech./elect. pump costs (1 gpm)	each	35	\$4,000	\$140,000
2.	Installation of forcemain	feet	10,000	\$22.50	\$225,000
3.	Installation of electrical conduits and panels	l.s.	1	\$50,000	\$50,000
Total					\$794,750

* Average depth of extraction wells would be approximately 40 feet, based on maximum observed waste depth of 39 feet

Provided that a permit can be obtained from the City to discharge to the sanitary sewer, management of extracted leachate would include on-site pretreatment (if needed) and discharge to the sanitary sewer for treatment and disposal. It was assumed that leachate pretreatment (if needed) would consist of:

- An equalization tank with an aeration system
- Additional pretreatment via addition of a coagulant and polymer
- Clarifier
- Sludge holding tank and filter press
- Filter feed tank/cartridge filter/air stripper

Installation of such a pretreatment system would have an estimated equipment cost of \$300,000 and an estimated installation and structure cost of \$1,000,000 for an estimated total capital cost of \$1,300,000. Discharge to the sanitary sewer would have an estimated capital cost of \$25,000 (tie-in to sewer in the Brandt Pike right-of-way). An allowance of \$10,000 has also been made for a system to monitor available sewer capacity (such that site discharges could be reduced or shut down if necessary to avoid backups in

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the downstream network, as the City has stated would be required for a tie-in). Note that it may also be possible to discharge directly to the sanitary sewer without pretreatment.

2.4 LANDFILL GAS

Landfill gas (LFG) collection and flaring is included in all remedial alternatives.

The FS Report presents a proposed LFG collection system concept that includes up to approximately 28 dual-phase (i.e., leachate and LFG) extraction wells that may be installed. It was assumed that the extraction wells would be connected via a LFG header network over to the western portion of the site, and that the existing enclosed flare would be replaced with a utility flare. An allowance was also included to install a new perimeter LFG abatement system following cap installation. An allowance was also included for expansion of the existing perimeter LFG monitoring network. As shown below, the estimated cost to install such a system is \$764,000.

<i>Item</i>	<i>Unit</i>	<i>Estimated Quantity</i>	<i>Unit Price</i>	<i>Estimated Cost</i>
1. Installation of 28 dual-phase extraction wells	(included in leachate system cost estimate)			
2. Installation of header piping	feet	9,500	\$22.50	\$214,000
3. Installation of new utility flare	l.s.	1	\$200,000	\$200,000
4. Installation of new perimeter abatement system	l.s.	1	\$300,000	\$300,000
5. Expansion of LFG monitoring network	l.s.	1	\$50,000	\$50,000
Total				\$764,000

No costs were included for potential future energy recovery devices, as the feasibility of operating such a system is unknown at this time.

2.5 GROUNDWATER

Two process options were identified for addressing groundwater, including monitoring (Alternatives 2a and 3a) and groundwater extraction (Alternatives 2b and 3b).

The only capital work required in relation to monitoring (all alternatives) is an estimated \$150,000 to expand the groundwater monitoring network.

For alternatives 2b and 3b, the FS Report presents a proposed groundwater extraction system concept that includes up to approximately 10 extraction wells pumping at 2 to 5 gpm each, for a total pumping rate of 41 gpm. It was assumed that the extraction wells would be connected via a groundwater forcemain network over to the western portion of the site. As shown below, the estimated cost to install an extraction system is \$276,000.

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	<i>Item</i>	<i>Unit</i>	<i>Estimated Quantity</i>	<i>Unit Price</i>	<i>Estimated Cost</i>
1.	Installation of 10 extraction wells				
	i) Structural costs	each	10	\$10,850	\$108,500
	ii) Mech./elect. pump costs (2 to 5 gpm)	each	10	\$5,000	\$50,000
2.	Installation of forcemain	feet	3,000	\$22.50	\$67,500
3.	Installation of electrical conduits and panels	l.s.	1	\$50,000	\$50,000
				Total	\$276,000

For the purpose of the remedial action cost estimates, it was assumed that extracted groundwater under Alternatives 2b and 3b would be combined with the extracted leachate for management in the same manner. Expansion of the leachate pretreatment system (described above in Section 2.3) to accommodate extracted groundwater would have an estimated incremental equipment cost of \$150,000 and an estimated incremental installation and structure cost of \$500,000 for an estimated total incremental capital cost of \$650,000.

3.0 ESTIMATED ANNUAL O&M COSTS

Estimated annual O&M costs for addressing media are discussed in the following sections:

- Section 3.1 Waste and OPBWA Soil
- Section 3.2 NAPL
- Section 3.3 Leachate
- Section 3.4 Landfill Gas
- Section 3.5 Groundwater

3.1 WASTE AND OPBWA SOIL

Annual O&M for the cap is estimated to cost \$25,000. Annual O&M for stormwater facilities is estimated to cost \$25,000. Costs for fence maintenance were not included given that a fence is not desired under future re-use scenarios.

3.2 NAPL

Annual O&M for NAPL monitoring/removal is estimated to cost \$5,000.

3.3 LEACHATE

Annual O&M for the leachate extraction system is estimated to cost \$50,000.

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Annual O&M for the leachate pretreatment system (if needed) is estimated to cost \$150,000.

Under the 2-series alternatives (employing an SW cap), operation of a leachate extraction system at approximately 31 gpm would generate approximately 180,000 ft³ of leachate per month. Based on the approximate monthly flow rate and rate schedule, monthly disposal costs are calculated as follows:

\$16.39 per 1,000 ft ³ for first 3,300 ft ³ = \$16.39 x 3,300/1,000	=	\$ 54.09
\$12.57 per 1,000 ft ³ for next 30,000 ft ³ = \$12.57 x 30,000/1,000	=	\$ 377.10
\$11.13 per 1,000 ft ³ over 33,300 ft ³ = \$11.13 x 146,700/1,000	=	<u>\$ 1,632.77</u>
Total		\$ 2,063.96

Under the 3-series alternatives (employing an alternate SW cap), operation of a leachate extraction system at approximately 38 gpm would generate approximately 220,000 ft³ of leachate per month. Based on the approximate monthly flow rate and rate schedule, monthly disposal costs are calculated as follows:

\$16.39 per 1,000 ft ³ for first 3,300 ft ³ = \$16.39 x 3,300/1,000	=	\$ 54.09
\$12.57 per 1,000 ft ³ for next 30,000 ft ³ = \$12.57 x 30,000/1,000	=	\$ 377.10
\$11.13 per 1,000 ft ³ over 33,300 ft ³ = \$11.13 x 186,700/1,000	=	<u>\$ 2,077.97</u>
Total		\$ 2,509.16

Extra strength surcharges may also apply depending on the actual leachate chemistry. It is estimated that disposal characterization monitoring would cost \$5,000 annually. Thus, the total estimated annual O&M cost for leachate discharge to the sanitary sewer is:

Series	<u>Disposal Cost</u>			Annual Monitoring	Total Annual Cost
	Monthly	Annually	Annual Including Surcharge		
2-Series	\$2,063.96	\$24,767.52	\$30,000.00	\$5,000.00	\$35,000.00
3-Series	\$2,509.16	\$30,109.92	\$35,000.00	\$5,000.00	\$40,000.00

3.4 LANDFILL GAS

Annual O&M for the LFG collection/flaring system is estimated to cost \$50,000. Annual O&M for LFG monitoring and LFG instrumentation maintenance is estimated to cost \$25,000.

3.5 GROUNDWATER

It is estimated that groundwater monitoring would cost \$150,000 annually (based on monitoring 40 wells two times per year). It is estimated that monitoring well maintenance would cost \$10,000 annually.

Annual O&M for the groundwater extraction system (Alternatives 2b and 3b) is estimated to cost \$50,000.

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As stated above in Section 2.5, for the purpose of the remedial action cost estimates, it was assumed that extracted groundwater under Alternatives 2b and 3b would be combined with the extracted leachate for management in the same manner. O&M of the pretreatment system to accommodate extracted groundwater would have an estimated incremental annual O&M cost of \$75,000.

Operation of a groundwater extraction system at approximately 41 gpm would generate approximately 240,000 ft³ of groundwater per month. Based on the approximate monthly flow rate and rate schedule, monthly disposal costs are calculated as follows:

\$16.39 per 1,000 ft ³ for first 3,300 ft ³ = $\$16.39 \times 3,300/1,000$	=	\$	54.09
\$12.57 per 1,000 ft ³ for next 30,000 ft ³ = $\$12.57 \times 30,000/1,000$	=	\$	377.10
\$11.13 per 1,000 ft ³ over 33,300 ft ³ = $\$11.13 \times 206,700/1,000$	=	\$	<u>2,300.57</u>
Total		\$	2,731.76

Thus, disposal of approximately 41 gpm of groundwater to the sanitary sewer is estimated to cost \$2,731.76/month or \$33,000/year. Extra strength surcharges may also apply depending on the actual groundwater chemistry, thus, it was assumed that discharge to the sanitary sewer would cost \$38,000 annually. It is estimated that disposal characterization monitoring would cost \$5,000 annually. Thus, the total estimated annual O&M cost for discharge to sanitary sewer is \$43,000.

4.0 ESTIMATED PERIODIC COSTS

Periodic costs can include construction/O&M activities (e.g., remedy failure, replacement, or decommissioning), professional/technical services (e.g., 5-year reviews), and institutional controls.

Regarding construction/O&M activities, remedy failure or replacement is not anticipated. Periodic construction activities would be limited to decommissioning of systems following remedy completion. The following estimated decommissioning costs have been included:

- Leachate extraction, pretreatment, and sanitary sewer tie-in system decommissioning (all alternatives): \$150,000
- LFG collection/flaring system decommissioning (all alternatives): \$100,000
- LFG monitoring network decommissioning (all alternatives): \$50,000
- Groundwater extraction -system decommissioning (Alternatives 2b and 3b): \$150,000
- Groundwater monitoring network decommissioning (all alternatives): \$100,000
- Remedial Action Report (all alternatives): \$100,000

At this time, 5-year reviews are the only anticipated professional/technical service periodic cost. An allowance of \$50,000 has been included for each 5-year review.

Periodic institutional control costs are not expected above those already included in annual O&M and thus have not been included.

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5.0 GROUNDWATER CONTINGENT REMEDIES

As discussed in the FS Report, if monitoring alone for groundwater is selected as part of the final remedy, then the following contingent remedies could potentially be relied upon if the selected remedy is determined to be not fully working as planned:

- Enhanced biodegradation
- Groundwater extraction

It is estimated that enhanced biodegradation (e.g., the addition of oxygen, chemical nutrients, or other substances to the groundwater to accelerate biodegradation) would cost \$500,000.

It is estimated that groundwater extraction (e.g., a system potentially similar to that described above in Section 2.5) would cost \$1,500,000.

6.0 SUMMARY

Table 2 presents a summary of estimated capital, annual O&M, and periodic costs associated with each of the four site-wide comprehensive remedial alternatives. For each medium, the complete list of remedial process options being considered are identified.

As stated in USEPA (2000), contingency is typically added as a percentage to each of the total cost of construction activities and O&M. Calculations in Table 2 include a total contingency value (scope + bid) for capital costs in the amount of 30 percent and include a total contingency value (scope + bid) for O&M costs in the amount of 30 percent. These values are within the ranges outlined in Section 5.4 of USEPA (2000).

As stated in USEPA (2000), professional/technical services are typically estimated as a percentage of each of the total cost of construction activities and O&M plus contingency. Consistent with Exhibit 5-8 of USEPA (2000), and given that the capital cost associated with all remedial alternatives is expected to exceed \$10M, the following percentages were used in Table 2: Project Management (5 percent applied to both capital and O&M costs), Remedial Design (6 percent applied to capital costs), and Construction Management (6 percent applied to capital costs). Consistent with Section 5.5 of USEPA (2000), O&M technical support was assumed to be 15 percent of the total annual O&M cost.

As recommended in Section 5.6 of USEPA (2000), allowances were included in Table 2 without contingency for institutional controls such as the Environmental Covenant, groundwater-use restrictions, and site information database (\$25,000 capital cost allowance, and \$10,000 annual O&M allowance).

The following total periodic costs are expected (see Table 2):

- \$520,000 (\$400,000 plus 30 percent contingency) is expected to be incurred for decommissioning of systems associated with Alternatives 2a and 3a
- \$715,000 (\$550,000 plus 30 percent contingency) is expected to be incurred for decommissioning of systems associated with Alternatives 2b and 3b
- \$65,000 (\$50,000 plus 30 percent contingency) is expected to be incurred in association with each 5-year review for all alternatives

CRA MEMORANDUM

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- \$130,000 (\$100,000 plus 30 percent contingency) is expected to be incurred in association with the Remedial Action Report for all alternatives

NPV calculations for O&M were based on an assumed 30-year timeframe for all remedial components. Periodic costs associated with 5-year reviews would be incurred during years 5, 10, 15, 20, and 25. Periodic costs associated with decommissioning of systems and the Remedial Action Report would be incurred in Year 30.

Consistent with USEPA (2000), NPV calculations were based on a discount rate of 7 percent. Annual and multi-year discount factors are shown in Table 3. NPVs are calculated in Table 4.

The NPV of the four site-wide remedial alternatives are as follows [for simplicity, the constants (i.e., included as part of each alternative) are not included in the descriptions below, but their estimated costs are included]:

	<i>2a</i> <i>SW Cap</i> <i>GW Monitoring</i>	<i>2b</i> <i>SW Cap</i> <i>GW Extraction</i>	<i>3a</i> <i>Alt. SW Cap</i> <i>GW Monitoring</i>	<i>3b</i> <i>Alt. SW Cap</i> <i>GW Extraction</i>
Capital Cost	\$22,705,311	\$24,113,757	\$17,846,790	\$19,255,236
NPV O&M Costs	\$10,287,095	\$13,539,257	\$10,383,886	\$13,636,047
NPV Periodic Costs	<u>\$217,108</u>	<u>\$242,725</u>	<u>\$217,108</u>	<u>\$242,725</u>
Total Cost	\$33,209,514	\$37,895,738	\$28,447,784	\$33,134,008

In the unlikely event that a permit cannot be obtained from the City to discharge extracted leachate and groundwater (pretreated if necessary) to the sanitary sewer, then contingent disposal options may include on-site pretreatment and discharge to an on-site infiltration impoundment or infiltration gallery (with agency approval), or transportation to an off-site commercial facility for treatment and disposal, etc. If on-site management through an infiltration impoundment/gallery is used, then the pretreated liquids would be piped to the borrow area for infiltration, as it is expected that this area will have the capacity to receive the liquids without having an appreciable negative influence on the performance of the extraction systems (the volume to be infiltrated would be less than half of the annual precipitation falling on the site). It was assumed that all of the liquids would require pretreatment and discharge characterization monitoring, and that the cost for on-site management would be the same regardless of which infiltration technology (impoundment or gallery) is used. If transportation and disposal (T&D) to an off-site commercial facility is used, then a storage tank would need to be installed to accommodate extracted liquids pending transportation (a larger tank would be needed for the b-series alternatives). In order to evaluate costs associated with T&D to an off-site commercial facility, information was obtained from a local vendor for T&D to a facility in Middletown, OH, which is located approximately 30 miles south of the site. Based on 5,000-gallon loads as indicated by the vendor, the price for transportation would be \$0.057/gallon and the price for disposal would be \$0.045/gallon, for a total T&D cost of \$0.10/gallon. The total NPV for each alternative under both of these contingent disposal options, as well as the number of loads to be transported off site each day under the off-site T&D option (based on 5 days per week) is as follows:

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<i>Alternative</i>	<i>On-Site Management NPV</i>	<i>Off-Site T&D</i>	
		<i>Loads/Day</i>	<i>NPV</i>
2a	\$32,822,352	12.5	\$59,215,105
2b	\$37,063,340	29.0	\$102,458,431
3a	\$28,021,905	15.4	\$61,478,816
3b	\$32,262,893	31.9	\$104,722,141

7.0 REFERENCES

Conestoga-Rovers & Associates, January 2011. Feasibility Study Report for the North Sanitary Landfill, Dayton, Ohio

United States Environmental Protection Agency, October 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (EPA/540/G-89/004)

United States Environmental Protection Agency, July 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study (EPA 540-R-00-002)

TABLE 1

Page 1 of 1

CAPPING CAPITAL COST ESTIMATE
NORTH SANITARY LANDFILL
DAYTON, OHIO

				Disposal Area				Totals	\$/acre
				1	2	5	3		
			Area (ft ²):	1,328,980	214,023	1,011,509	466,362	3,020,874	
			Area (acres):	30.5	4.9	23.2	10.7	69.35	
Item	Unit	Unit Price	Quantity (inches)						
<u>SW Cap</u>									
Vegetated Layer	cy	\$25	6	\$615,269	\$99,085	\$468,291	\$215,908	\$1,398,553	
Cap Protection Layer	cy	\$18	6	\$442,993	\$71,341	\$337,170	\$155,454	\$1,006,958	
Soil Drainage Layer	cy	\$20	18	\$1,476,644	\$237,803	\$1,123,899	\$518,180	\$3,356,527	
FML	ft ²	\$0.70		\$930,286	\$149,816	\$708,056	\$326,453	\$2,114,612	
GCL	ft ²	\$0.65		\$863,837	\$139,115	\$657,481	\$303,135	\$1,963,568	
							Total:	\$9,840,217	\$141,899
<u>Alternate SW Cap</u>									
Vegetated Layer	cy	\$25	6	\$615,269	\$99,085	\$468,291	\$215,908	\$1,398,553	
Cap Protection Layer	cy	\$18	12	\$885,987	\$142,682	\$674,339	\$310,908	\$2,013,916	
Soil Drainage Layer	cy	\$20	6	\$492,215	\$79,268	\$374,633	\$172,727	\$1,118,842	
FML	ft ²	\$0.70		\$930,286	\$149,816	\$708,056	\$326,453	\$2,114,612	
							Total:	\$6,645,923	\$95,836
<u>Other Potential SW Cap Designs¹</u>									
<u>Low Permeability Clay Instead of GCL, GDN Instead of Soil Drainage Layer</u>									
Vegetated Layer	cy	\$25	6	\$615,269	\$99,085	\$468,291	\$215,908	\$1,398,553	
Cap Protection Layer	cy	\$18	24	\$1,771,973	\$285,364	\$1,348,679	\$621,816	\$4,027,832	
GDN	ft ²	\$0.65		\$863,837	\$139,115	\$657,481	\$303,135	\$1,963,568	
FML	ft ²	\$0.70		\$930,286	\$149,816	\$708,056	\$326,453	\$2,114,612	
Low Permeability Clay Layer	cy	\$25	18	\$1,845,806	\$297,254	\$1,404,874	\$647,725	\$4,195,658	
							Total:	\$13,700,223	\$197,562
<u>Low Permeability Clay Instead of GCL, Soil Drainage Layer Instead of GDN</u>									
Vegetated Layer	cy	\$25	6	\$615,269	\$99,085	\$468,291	\$215,908	\$1,398,553	
Cap Protection Layer	cy	\$18	6	\$442,993	\$71,341	\$337,170	\$155,454	\$1,006,958	
Soil Drainage Layer	cy	\$20	18	\$1,476,644	\$237,803	\$1,123,899	\$518,180	\$3,356,527	
FML	ft ²	\$0.70		\$930,286	\$149,816	\$708,056	\$326,453	\$2,114,612	
Low Permeability Clay Layer	cy	\$25	18	\$1,845,806	\$297,254	\$1,404,874	\$647,725	\$4,195,658	
							Total:	\$12,072,308	\$174,087
<u>GCL Instead of Low Permeability Clay, GDN Instead of Soil Drainage Layer</u>									
Vegetated Layer	cy	\$25	6	\$615,269	\$99,085	\$468,291	\$215,908	\$1,398,553	
Cap Protection Layer	cy	\$18	24	\$1,771,973	\$285,364	\$1,348,679	\$621,816	\$4,027,832	
GDN	ft ²	\$0.65		\$863,837	\$139,115	\$657,481	\$303,135	\$1,963,568	
FML	ft ²	\$0.70		\$930,286	\$149,816	\$708,056	\$326,453	\$2,114,612	
GCL	ft ²	\$0.65		\$863,837	\$139,115	\$657,481	\$303,135	\$1,963,568	
							Total:	\$11,468,133	\$165,374

Notes:

GDN = geosynthetic drainage net; FML = flexible membrane liner; GCL = geosynthetic clay layer.

Quantities are based on a flat projection; therefore, there will be minor discrepancies in the volume calculations.

It is estimated that the relocation of Disposal Area 4 waste to be graded over the remaining disposal areas, and simple grading of the resulting Disposal Area 4 excavation, could be performed at a unit rate of \$10/cy. Based on the estimated 153,708 cubic yards (cy) of waste and cover material in Disposal Area 4, the estimated cost of the waste relocation work is \$1,537,080. Post-excavation sampling would be performed in Disposal Area 4 to confirm that any direct-contact risk had been addressed. The estimated cost of the post-excavation sampling is \$25,000.

The estimated cost for OPBWA waste and soil consolidation into Disposal Area 1 is \$7,650 (i.e., 765 cy x \$10/cy).

¹These represent other SW cap designs possible within OAC 3745-27-08 with slope variance.

TABLE 2

Page 1 of 1

SUMMARY OF ESTIMATED CAPITAL, ANNUAL O/M, AND PERIODIC COSTS
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

Environmental Media	Alternative No.:	2a	2b	3a	3b
	Disposal Area 1, 2, 3, 5 Cap:	SW Cap	SW Cap	Alternate SW Cap	Alternate SW Cap
	Groundwater:	Monitoring	Extraction	Monitoring	Extraction
	Process Options				

CAPITAL COSTS

Waste and Soil	Disposal Area 4 Waste Relocation	\$1,537,080	\$1,537,080	\$1,537,080	\$1,537,080
	Disposal Area 4 Post-Excavation Sampling	\$25,000	\$25,000	\$25,000	\$25,000
	OPBWA Waste and Soil Consolidation	\$7,650	\$7,650	\$7,650	\$7,650
	OPBWA Post-Excavation Sampling	\$2,000	\$2,000	\$2,000	\$2,000
	Cap Disposal Areas 1, 2, 3, 5	\$9,840,217	\$9,840,217	\$6,645,923	\$6,645,923
	Stormwater Management Facilities	\$250,000	\$250,000	\$250,000	\$250,000
NAPL	Valleycrest Drive Re-Opening	\$180,750	\$180,750	\$180,750	\$180,750
	Recovery Systems at NSL-54L and NSL-55L	\$25,000	\$25,000	\$25,000	\$25,000
	Extraction System	\$794,750	\$794,750	\$794,750	\$794,750
Leachate	Pretreatment System	\$1,300,000	\$1,300,000	\$1,300,000	\$1,300,000
	Sanitary Sewer Tie-In and Capacity Sensor	\$35,000	\$35,000	\$35,000	\$35,000
Landfill Gas	Collection and Monitoring System	\$764,000	\$764,000	\$764,000	\$764,000
	Energy Recovery Devices	not included	not included	not included	not included
Groundwater	Monitoring Network Expansion	\$150,000	\$150,000	\$150,000	\$150,000
	Extraction System	not included	\$276,000	not included	\$276,000
	Pretreatment System (incremental to leachate)	not included	\$650,000	not included	\$650,000
Subtotal Capital Cost:		\$14,911,447	\$15,837,447	\$11,717,153	\$12,643,153
Contingency (30%):		\$4,473,434	\$4,751,234	\$3,515,146	\$3,792,946
Subtotal:		\$19,384,881	\$20,588,681	\$15,232,299	\$16,436,099
Professional/Technical Services - Project Management (5%):		\$969,244	\$1,029,434	\$761,615	\$821,805
Professional/Technical Services - Remedial Design (6%):		\$1,163,093	\$1,235,321	\$913,938	\$986,166
Professional/Technical Services - Construction Management (6%):		\$1,163,093	\$1,235,321	\$913,938	\$986,166
Institutional Controls:		\$25,000	\$25,000	\$25,000	\$25,000
Total Capital Cost:		\$22,705,311	\$24,113,757	\$17,846,790	\$19,255,236

ANNUAL O&M COSTS

Waste	Cap	\$25,000	\$25,000	\$25,000	\$25,000
	Stormwater Management Facilities	\$25,000	\$25,000	\$25,000	\$25,000
NAPL	Monitoring/Removal	\$5,000	\$5,000	\$5,000	\$5,000
Leachate	Extraction System	\$50,000	\$50,000	\$50,000	\$50,000
	Pretreatment System	\$150,000	\$150,000	\$150,000	\$150,000
	Off-Site Disposal	\$35,000	\$35,000	\$40,000	\$40,000
Landfill Gas	Collection and Flaring	\$50,000	\$50,000	\$50,000	\$50,000
	Monitoring	\$25,000	\$25,000	\$25,000	\$25,000
Groundwater	Extraction System	not included	\$50,000	not included	\$50,000
	Pretreatment System (incremental to leachate)	not included	\$75,000	not included	\$75,000
	Off-Site Disposal	not included	\$43,000	not included	\$43,000
	Monitoring	\$150,000	\$150,000	\$150,000	\$150,000
	Monitoring Well Maintenance	\$10,000	\$10,000	\$10,000	\$10,000
Subtotal Annual O&M Cost:		\$525,000	\$693,000	\$530,000	\$698,000
Contingency (30%):		\$157,500	\$207,900	\$159,000	\$209,400
Subtotal:		\$682,500	\$900,900	\$689,000	\$907,400
Professional/Technical Services - Project Management (5%):		\$34,125	\$45,045	\$34,450	\$45,370
Professional/Technical Services - O&M Technical Support (15%):		\$102,375	\$135,135	\$103,350	\$136,110
Institutional Controls:		\$10,000	\$10,000	\$10,000	\$10,000
Total Annual O&M Cost:		\$829,000	\$1,091,080	\$836,800	\$1,098,880

PERIODIC COSTS¹

Leachate	Extraction/Pretreatment System Decommissioning	\$150,000	\$150,000	\$150,000	\$150,000
Landfill Gas	Collection System Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Monitoring Network Decommissioning	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Extraction System Decommissioning	not included	\$150,000	not included	\$150,000
	Monitoring Network Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
Subtotal Decommissioning Cost		\$400,000	\$550,000	\$400,000	\$550,000
Contingency (30%):		\$120,000	\$165,000	\$120,000	\$165,000
Subtotal:		\$520,000	\$715,000	\$520,000	\$715,000
Various	5-Year Reviews	\$65,000	\$65,000	\$65,000	\$65,000
Various	Remedial Action Report	\$130,000	\$130,000	\$130,000	\$130,000

Notes

¹Decommissioning and Remedial Action Report costs occur at Year 30. 5-Year review costs occur at Years 5, 10, 15, 20, and 25. Includes 30% contingency.

TABLE 3

**ANNUAL AND MULTI-YEAR DISCOUNT FACTORS (7%)
NORTH SANITARY LANDFILL
DAYTON, OHIO**

<i>Years</i>	<i>Annual Discount Factor</i>	<i>Multi-Year Discount Factor</i>
1	0.935	0.935
2	0.873	1.808
3	0.816	2.624
4	0.763	3.387
5	0.713	4.100
6	0.666	4.767
7	0.623	5.389
8	0.582	5.971
9	0.544	6.515
10	0.508	7.024
11	0.475	7.499
12	0.444	7.943
13	0.415	8.358
14	0.388	8.745
15	0.362	9.108
16	0.339	9.447
17	0.317	9.763
18	0.296	10.059
19	0.277	10.336
20	0.258	10.594
21	0.242	10.836
22	0.226	11.061
23	0.211	11.272
24	0.197	11.469
25	0.184	11.654
26	0.172	11.826
27	0.161	11.987
28	0.150	12.137
29	0.141	12.278
30	0.131	12.409

TABLE 4

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NET PRESENT VALUE ANALYSIS (30 YEARS, 7%)
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

<i>Cost Type</i>	<i>Year</i>	<i>Total Cost</i>	<i>Total Cost Per Year</i>	<i>Discount Factor (7%)</i>	<i>Present Value</i>
<u>Alternative 2a</u>					
Capital Cost	0	\$ 22,705,311	\$ 22,705,311	1.000	\$ 22,705,311
Annual O&M Cost	1-30	\$ 24,870,000	\$ 829,000	12.409	\$ 10,287,095
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 48,550,311			\$ 33,209,514
<u>Alternative 2b</u>					
Capital Cost	0	\$ 24,113,757	\$ 24,113,757	1.000	\$ 24,113,757
Annual O&M Cost	1-30	\$ 32,732,400	\$ 1,091,080	12.409	\$ 13,539,257
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 58,016,157			\$ 37,895,738
<u>Alternative 3a</u>					
Capital Cost	0	\$ 17,846,790	\$ 17,846,790	1.000	\$ 17,846,790
Annual O&M Cost	1-30	\$ 25,104,000	\$ 836,800	12.409	\$ 10,383,886
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 43,925,790			\$ 28,447,784
<u>Alternative 3b</u>					
Capital Cost	0	\$ 19,255,236	\$ 19,255,236	1.000	\$ 19,255,236
Annual O&M Cost	1-30	\$ 32,966,400	\$ 1,098,880	12.409	\$ 13,636,047
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 53,391,636			\$ 33,134,008

ATTACHMENT A

CITY OF DAYTON'S SCHEDULE OF RATES FOR
SEWER SERVICE



Home City Commission Office City Manager's Office Departments News Services My Dayton

Water Service Rates

Minimum charge per quarter

RATES FOR WATER SERVICE

Minimum Charge Per Quarter
(Effective January 1, 2009)

5/8"	Meter	\$12.97
3/4"	Meter	\$21.53
1"	Meter	\$46.50
1-1.5"	Meter	\$91.87
2"	Meter	\$168.01
3"	Meter	\$358.08
4"	Meter	\$551.09
6"	Meter	\$965.53
8"	Meter	\$1,652.38
10"	Meter	\$2,753.67
>10"	Meter	\$3,800.47
First	10,000 CF/1000	\$24.67
Next	90,000 CF/1000	\$23.50
Next	400,000 CF/1000	\$22.17
Next	500,000 CF/1000	\$18.17
Over	1,000,000 CF/1000	\$16.79

RATES FOR SEWER SERVICE

Minimum Charge per Quarter
(Effective January 1, 2009)

5/8"	Meter	\$14.16
3/4"	Meter	\$14.16
1"	Meter	\$27.67
1.5"	Meter	\$29.28
2"	Meter	\$32.10
3"	Meter	\$66.39
4"	Meter	\$78.50
6"	Meter	\$106.73
8"	Meter	\$139.00
10"	Meter	\$175.33
First	10,000 CF/1000	\$16.39
Next	90,000 CF/1000	\$12.57
Over	100,000 CF/1000	\$11.13

Minimum charge per month

RATES FOR WATER SERVICE

Minimum Charge Per Month
(Effective January 1, 2009)

5/8"	Meter	\$10.27
3/4"	Meter	\$13.06
1"	Meter	\$22.07
1-1.5"	Meter	\$37.52
2"	Meter	\$63.57
3"	Meter	\$127.16
4"	Meter	\$191.30
6"	Meter	\$322.98
8"	Meter	\$551.17
10"	Meter	\$918.46
>10"	Meter	\$1,266.78
First	3,300 CF/1000	\$24.67
Next	30,000 CF/1000	\$23.50
Next	133,000 CF/1000	\$22.17
Next	167,000 CF/1000	\$18.17
Over	333,300 CF/1000	\$16.79

RATES FOR SEWER SERVICE

Minimum charge per month
(Effective January 1, 2009)

5/8"	Meter	\$11.19
3/4"	Meter	\$11.19
1"	Meter	\$15.70
1.5"	Meter	\$16.24
2"	Meter	\$17.18
3"	Meter	\$28.61
4"	Meter	\$32.64
6"	Meter	\$42.06
8"	Meter	\$52.81
10"	Meter	\$64.91
First	3,300 CF/1000	\$16.39
Next	30,000 CF/1000	\$12.57
Over	33,300 CF/1000	\$11.13

Additionally, the above rates are subject to charges up to \$0.50/1000 cf, added for the Wall Field Protection Fund.

In addition to the above rates, an Extra Strength Surcharge shall be made for discharges as follows:

NOTICE

Strength Component

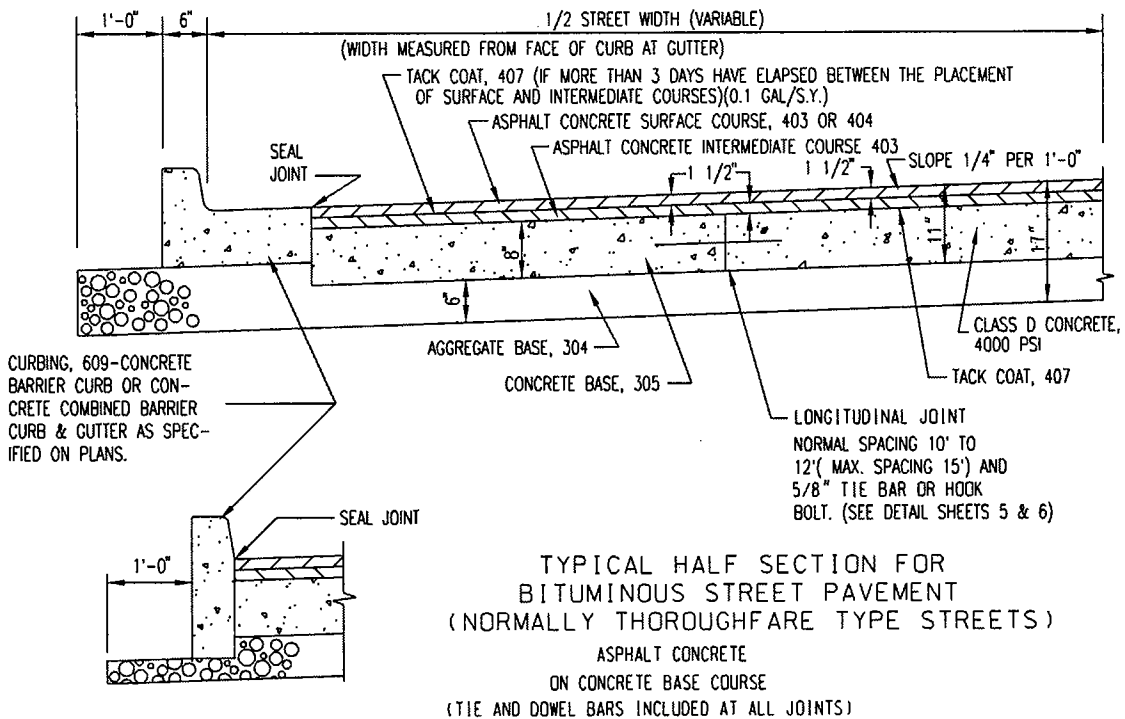
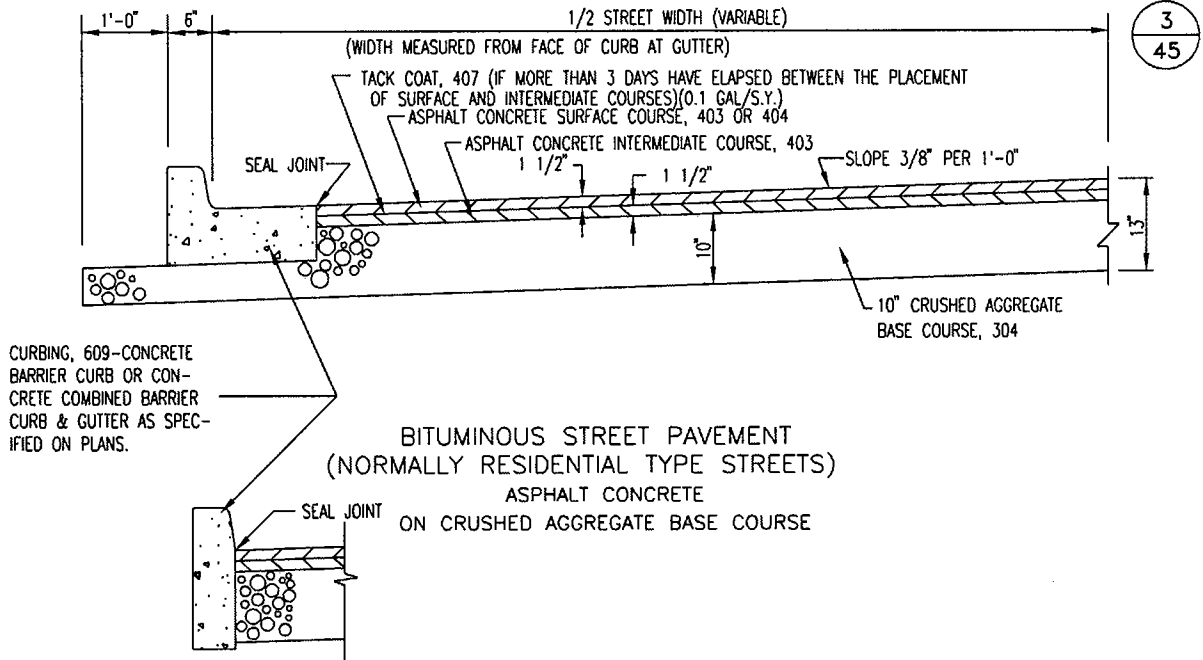
Charge Per Excess
Strength Unit Per 1000
cf

Net amount (5% discount) allowed if paid by the day
specified. Gross amount payable thereafter.
For further information: 333-3550

Biochemical Oxygen Demand (BOD) in excess of 350 mg/l	\$0.00567
Suspended Solids in excess of 350 mg/l	\$0.00609
Special monitoring charge - \$/ccf	\$0.09216

ATTACHMENT B

CITY OF DAYTON'S STANDARDS
FOR STREET IMPROVEMENTS



NOTE:
SEE CURB AND GUTTER
DETAILS, SHEET 8. REIN-
FORCING IS USED AS
SPECIFIED ON THE JOB
PLANS.

REVISIONS	STANDARDS FOR
	STREET IMPROVEMENTS
	TYPICAL PAVEMENT
	SECTIONS FOR
	BITUMINOUS STREET
	PAVEMENT
	CITY OF DAYTON, OHIO
	NO SCALE 14A-17113

2a		2b		3a		3b	
	Total	NPV	Total	NPV	Total	NPV	Total
POTW Base	\$48,550,311	\$33,209,514	\$58,016,157	\$37,895,738	\$43,925,790	\$28,447,784	\$53,391,636
POTW Variation	\$52,137,700	\$43,113,469	\$62,301,568	\$50,460,529	\$47,156,997	\$38,052,126	\$57,320,865
T&D Base	\$114,191,886	\$59,215,105	\$218,112,867	\$102,458,431	\$126,552,015	\$61,478,816	\$230,472,996
T&D Variation	\$122,698,630	\$90,379,862	\$234,400,108	\$166,412,588	\$135,976,437	\$97,723,881	\$247,677,885
							\$173,756,586

Base Assumptions are 7% NPV Discount Rate and \$0 for agency oversight of the RDRA both of which are unrealistic.

Variation Assumptions are 9% oversight costs of the RDRA based on actual experience at the Site over the history of the Site and 2.7% NPV Discount Rate based on U.S. Government data on prevailing prime interest rates and predictions regarding future rates.

EXHIBIT

2

Blumberg No. 5119

NET PRESENT VALUE ANALYSIS (30 YEARS, 0% AGENCY OVERSIGHT, 7% DISCOUNT RATE)
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

Page 1 of 5

Cost Type	Year	Total Cost	Total Cost Per Year	Discount Factor (7%)	Present Value
Alternative 2a					
Capital Cost	0	\$ 22,705,311	\$ 22,705,311	1.000	\$ 22,705,311
Annual O&M Cost	1-30	\$ 24,870,000	\$ 829,000	12.409	\$ 10,287,095
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 48,550,311			\$ 33,209,514
Alternative 2b					
Capital Cost	0	\$ 24,113,757	\$ 24,113,757	1.000	\$ 24,113,757
Annual O&M Cost	1-30	\$ 32,732,400	\$ 1,091,080	12.409	\$ 13,539,257
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 58,016,157			\$ 37,895,738
Alternative 3a					
Capital Cost	0	\$ 17,846,790	\$ 17,846,790	1.000	\$ 17,846,790
Annual O&M Cost	1-30	\$ 25,104,000	\$ 836,800	12.409	\$ 10,383,886
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 43,925,790			\$ 28,447,784
Alternative 3b					
Capital Cost	0	\$ 19,255,236	\$ 19,255,236	1.000	\$ 19,255,236
Annual O&M Cost	1-30	\$ 32,966,400	\$ 1,098,880	12.409	\$ 13,636,047
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 53,391,636			\$ 33,134,008

NET PRESENT VALUE ANALYSIS (30 YEARS, 9% AGENCY OVERSIGHT, 2.7% DISCOUNT RATE)
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

Page 2 of 5

Cost Type	Year	Total Cost	Total Cost Per Year	Discount Factor (2.7%)	Present Value
Alternative 2a					
Capital Cost	0	\$ 24,449,950	\$ 24,449,950	1.000	\$ 24,449,950
Annual O&M Cost	1-30	\$ 26,712,750	\$ 890,425	20.383	\$ 18,149,417
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.450	\$ 233,825
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 52,137,700			\$ 43,113,469
Alternative 2b					
Capital Cost	0	\$ 25,966,738	\$ 25,966,738	1.000	\$ 25,966,738
Annual O&M Cost	1-30	\$ 35,164,830	\$ 1,172,161	20.383	\$ 23,892,005
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.450	\$ 321,509
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 62,301,568			\$ 50,460,529
Alternative 3a					
Capital Cost	0	\$ 19,217,697	\$ 19,217,697	1.000	\$ 19,217,697
Annual O&M Cost	1-30	\$ 26,964,300	\$ 898,810	20.383	\$ 18,320,327
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.450	\$ 233,825
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 47,156,997			\$ 38,052,126
Alternative 3b					
Capital Cost	0	\$ 20,734,485	\$ 20,734,485	1.000	\$ 20,734,485
Annual O&M Cost	1-30	\$ 35,416,380	\$ 1,180,546	20.383	\$ 24,062,915
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.450	\$ 321,509
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 57,320,865			\$ 45,399,187

NET PRESENT VALUE ANALYSIS (30 YEARS, 0% AGENCY OVERSIGHT, 7% DISCOUNT RATE)
(LEACHATE/GROUNDWATER T&D SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

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Cost Type	Year	Total Cost	Total Cost Per Year	Discount Factor (7%)	Present Value
Alternative 2a					
Capital Cost	0	\$ 20,750,826	\$ 20,750,826	1.000	\$ 20,750,826
Annual O&M Cost	1-30	\$ 92,466,060	\$ 3,082,202	12.409	\$ 38,247,172
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 114,191,886			\$ 59,215,105
Alternative 2b					
Capital Cost	0	\$ 21,284,697	\$ 21,284,697	1.000	\$ 21,284,697
Annual O&M Cost	1-30	\$ 195,658,170	\$ 6,521,939	12.409	\$ 80,931,010
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 218,112,867			\$ 102,458,431
Alternative 3a					
Capital Cost	0	\$ 15,892,305	\$ 15,892,305	1.000	\$ 15,892,305
Annual O&M Cost	1-30	\$ 109,684,710	\$ 3,656,157	12.409	\$ 45,369,403
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.131	\$ 68,311
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 126,552,015			\$ 61,478,816
Alternative 3b					
Capital Cost	0	\$ 16,426,176	\$ 16,426,176	1.000	\$ 16,426,176
Annual O&M Cost	1-30	\$ 212,876,820	\$ 7,095,894	12.409	\$ 88,053,241
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.713	\$ 46,344
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.508	\$ 33,043
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.362	\$ 23,559
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.258	\$ 16,797
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.184	\$ 11,976
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.131	\$ 93,927
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.131	\$ 17,078
		\$ 230,472,996			\$ 104,722,141

NET PRESENT VALUE ANALYSIS (30 YEARS, 9% AGENCY OVERSIGHT, 2.7% DISCOUNT RATE)
(LEACHATE/GROUNDWATER T&D SCENARIO)
NORTH SANITARY LANDFILL
DAYTON, OHIO

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Cost Type	Year	Total Cost	Total Cost Per Year	Discount Factor (2.7%)	Present Value
Alternative 2a					
Capital Cost	0	\$ 22,345,120	\$ 22,345,120	1.000	\$ 22,345,120
Annual O&M Cost	1-30	\$ 99,378,510	\$ 3,312,617	20.383	\$ 67,520,640
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.450	\$ 233,825
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 122,698,630			\$ 90,379,862
Alternative 2b					
Capital Cost	0	\$ 22,920,058	\$ 22,920,058	1.000	\$ 22,920,058
Annual O&M Cost	1-30	\$ 210,310,050	\$ 7,010,335	20.383	\$ 142,890,744
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.450	\$ 321,509
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 234,400,108			\$ 166,412,588
Alternative 3a					
Capital Cost	0	\$ 17,112,867	\$ 17,112,867	1.000	\$ 17,112,867
Annual O&M Cost	1-30	\$ 117,888,570	\$ 3,929,619	20.383	\$ 80,096,911
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 520,000	\$ 520,000	0.450	\$ 233,825
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 135,976,437			\$ 97,723,881
Alternative 3b					
Capital Cost	0	\$ 17,687,805	\$ 17,687,805	1.000	\$ 17,687,805
Annual O&M Cost	1-30	\$ 228,820,080	\$ 7,627,336	20.383	\$ 155,466,995
Periodic Cost (5-Year Review)	5	\$ 65,000	\$ 65,000	0.875	\$ 56,893
Periodic Cost (5-Year Review)	10	\$ 65,000	\$ 65,000	0.766	\$ 49,798
Periodic Cost (5-Year Review)	15	\$ 65,000	\$ 65,000	0.671	\$ 43,587
Periodic Cost (5-Year Review)	20	\$ 65,000	\$ 65,000	0.587	\$ 38,151
Periodic Cost (5-Year Review)	25	\$ 65,000	\$ 65,000	0.514	\$ 33,393
Periodic Cost (Decommissioning)	30	\$ 715,000	\$ 715,000	0.450	\$ 321,509
Periodic Cost (Remedial Action Report)	30	\$ 130,000	\$ 130,000	0.450	\$ 58,456
		\$ 247,677,885			\$ 173,756,586

**SUMMARY OF ESTIMATED CAPITAL, ANNUAL O&M, AND PERIODIC COSTS
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO, 0% AGENCY OVERSIGHT)
NORTH SANITARY LANDFILL
DAYTON, OHIO**

Page 1 of 4

	Alternative No.:	2a	2b	3a	3b
	Disposal Area 1, 2, 3, 5 Cap:	SW Cap	SW Cap	Alternate SW Cap	Alternate SW Cap
Environmental Media	Groundwater:	Monitoring	Extraction	Monitoring	Extraction
Process Options					

CAPITAL COSTS

Waste and OPBWA Soil	Disposal Area 4 Waste Relocation	\$1,537,080	\$1,537,080	\$1,537,080	\$1,537,080
	Disposal Area 4 Post-Excavation Sampling	\$25,000	\$25,000	\$25,000	\$25,000
	OPBWA Waste and Soil Consolidation	\$7,650	\$7,650	\$7,650	\$7,650
	OPBWA Post-Excavation Sampling	\$2,000	\$2,000	\$2,000	\$2,000
	Cap Disposal Areas 1, 2, 3, 5	\$9,840,217	\$9,840,217	\$6,645,923	\$6,645,923
	Stormwater Management Facilities	\$250,000	\$250,000	\$250,000	\$250,000
	Valleycrest Drive Re-Opening	\$180,750	\$180,750	\$180,750	\$180,750
NAPL Leachate	Recovery Systems at NSL-54L and NSL-55L	\$25,000	\$25,000	\$25,000	\$25,000
	Extraction System	\$794,750	\$794,750	\$794,750	\$794,750
	Pretreatment System	\$1,300,000	\$1,300,000	\$1,300,000	\$1,300,000
Landfill Gas	Sanitary Sewer Tie-In and Capacity Sensor	\$35,000	\$35,000	\$35,000	\$35,000
	Collection and Monitoring System	\$764,000	\$764,000	\$764,000	\$764,000
	Energy Recovery Devices	not included	not included	not included	not included
Groundwater	Monitoring Network Expansion	\$150,000	\$150,000	\$150,000	\$150,000
	Extraction System	not included	\$276,000	not included	\$276,000
	Pretreatment System (incremental to leachate)	not included	\$650,000	not included	\$650,000
Subtotal Capital Cost:		\$14,911,447	\$15,837,447	\$11,717,153	\$12,643,153
Contingency (30%):		\$4,473,434	\$4,751,234	\$3,515,146	\$3,792,946
Subtotal:		\$19,384,881	\$20,588,681	\$15,232,299	\$16,436,099
Professional/Technical Services - Project Management (5%):		\$969,244	\$1,029,434	\$761,615	\$821,805
Professional/Technical Services - Remedial Design (6%):		\$1,163,093	\$1,235,321	\$913,938	\$986,166
Professional/Technical Services - Construction Management (6%):		\$1,163,093	\$1,235,321	\$913,938	\$986,166
Institutional Controls:		\$25,000	\$25,000	\$25,000	\$25,000
Total Capital Cost:		\$22,705,311	\$24,113,757	\$17,846,790	\$19,253,236

ANNUAL O&M COSTS

Waste	Cap	\$25,000	\$25,000	\$25,000	\$25,000
	Stormwater Management Facilities	\$25,000	\$25,000	\$25,000	\$25,000
NAPL Leachate	Monitoring/Removal	\$5,000	\$5,000	\$5,000	\$5,000
	Extraction System	\$50,000	\$50,000	\$50,000	\$50,000
Landfill Gas	Pretreatment System	\$150,000	\$150,000	\$150,000	\$150,000
	Off-Site Disposal	\$35,000	\$35,000	\$40,000	\$40,000
	Collection and Flaring	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Monitoring	\$25,000	\$25,000	\$25,000	\$25,000
	Extraction System	not included	\$50,000	not included	\$50,000
	Pretreatment System (incremental to leachate)	not included	\$75,000	not included	\$75,000
	Off-Site Disposal	not included	\$43,000	not included	\$43,000
	Monitoring	\$150,000	\$150,000	\$150,000	\$150,000
Monitoring Well Maintenance		\$10,000	\$10,000	\$10,000	\$10,000
Subtotal Annual O&M Cost:		\$525,000	\$693,000	\$530,000	\$698,000
Contingency (30%):		\$157,500	\$207,900	\$159,000	\$209,400
Subtotal:		\$682,500	\$900,900	\$689,000	\$907,400
Professional/Technical Services - Project Management (5%):		\$34,125	\$45,045	\$34,450	\$45,370
Professional/Technical Services - O&M Technical Support (15%):		\$102,375	\$135,135	\$103,350	\$136,110
Institutional Controls:		\$10,000	\$10,000	\$10,000	\$10,000
Total Annual O&M Cost:		\$829,000	\$1,091,080	\$836,800	\$1,098,880

PERIODIC COSTS¹

Leachate	Extraction/Pretreatment System Decommissioning	\$150,000	\$150,000	\$150,000	\$150,000
Landfill Gas	Collection System Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Monitoring Network Decommissioning	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Extraction System Decommissioning	not included	\$150,000	not included	\$150,000
	Monitoring Network Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
Subtotal Decommissioning Cost		\$400,000	\$550,000	\$400,000	\$550,000
Contingency (30%):		\$120,000	\$165,000	\$120,000	\$165,000
Subtotal:		\$520,000	\$715,000	\$520,000	\$715,000
Various	5-Year Reviews	\$65,000	\$65,000	\$65,000	\$65,000
Various	Remedial Action Report	\$130,000	\$130,000	\$130,000	\$130,000

Notes

¹Decommissioning and Remedial Action Report costs occur at Year 30. 5-Year review costs occur at Years 5, 10, 15, 20, and 25. Includes 30% contingency.

**SUMMARY OF ESTIMATED CAPITAL, ANNUAL O&M, AND PERIODIC COSTS
(LEACHATE/GROUNDWATER SANITARY SEWER DISPOSAL SCENARIO, 9% AGENCY OVERSIGHT)
NORTH SANITARY LANDFILL
DAYTON, OHIO**

Page 2 of 4

Environmental Media	Alternative No.:	2a	2b	3a	3b
	Disposal Area 1, 2, 3, 5 Cap:	SW Cap	SW Cap	Alternate SW Cap	Alternate SW Cap
	Groundwater:	Monitoring	Extraction	Monitoring	Extraction
Process Options					

CAPITAL COSTS

Waste and OPBWA Soil	Disposal Area 4 Waste Relocation	\$1,537,080	\$1,537,080	\$1,537,080	\$1,537,080
	Disposal Area 4 Post-Excavation Sampling	\$25,000	\$25,000	\$25,000	\$25,000
	OPBWA Waste and Soil Consolidation	\$7,650	\$7,650	\$7,650	\$7,650
	OPBWA Post-Excavation Sampling	\$2,000	\$2,000	\$2,000	\$2,000
	Cap Disposal Areas 1, 2, 3, 5	\$9,840,217	\$9,840,217	\$6,645,923	\$6,645,923
	Stormwater Management Facilities	\$250,000	\$250,000	\$250,000	\$250,000
NAPL	Valleycrest Drive Re-Opening	\$180,750	\$180,750	\$180,750	\$180,750
	Recovery Systems at NSL-54L and NSL-55L	\$25,000	\$25,000	\$25,000	\$25,000
Leachate	Extraction System	\$794,750	\$794,750	\$794,750	\$794,750
	Pretreatment System	\$1,300,000	\$1,300,000	\$1,300,000	\$1,300,000
	Sanitary Sewer Tie-In and Capacity Sensor	\$35,000	\$35,000	\$35,000	\$35,000
Landfill Gas	Collection and Monitoring System	\$764,000	\$764,000	\$764,000	\$764,000
	Energy Recovery Devices	not included	not included	not included	not included
Groundwater	Monitoring Network Expansion	\$150,000	\$150,000	\$150,000	\$150,000
	Extraction System	not included	\$276,000	not included	\$276,000
	Pretreatment System (incremental to leachate)	not included	\$650,000	not included	\$650,000
	Subtotal Capital Cost:	\$14,911,447	\$15,837,447	\$11,717,153	\$12,643,153
	Contingency (30%):	\$4,473,434	\$4,751,234	\$3,515,146	\$3,792,946
	Subtotal:	\$19,384,881	\$20,588,681	\$15,232,299	\$16,436,099
	Professional/Technical Services - Project Management (5%):	\$969,244	\$1,029,434	\$761,615	\$821,805
	Professional/Technical Services - Remedial Design (6%):	\$1,163,093	\$1,235,321	\$913,938	\$986,166
	Professional/Technical Services - Construction Management (6%):	\$1,163,093	\$1,235,321	\$913,938	\$986,166
	Institutional Controls:	\$25,000	\$25,000	\$25,000	\$25,000
	Total Capital Cost:	\$24,449,950	\$25,966,738	\$19,217,697	\$20,734,485

ANNUAL O&M COSTS

Waste	Cap	\$25,000	\$25,000	\$25,000	\$25,000
	Stormwater Management Facilities	\$25,000	\$25,000	\$25,000	\$25,000
NAPL	Monitoring/Removal	\$5,000	\$5,000	\$5,000	\$5,000
Leachate	Extraction System	\$50,000	\$50,000	\$50,000	\$50,000
	Pretreatment System	\$150,000	\$150,000	\$150,000	\$150,000
	Off-Site Disposal	\$35,000	\$35,000	\$40,000	\$40,000
Landfill Gas	Collection and Flaring	\$50,000	\$50,000	\$50,000	\$50,000
	Monitoring	\$25,000	\$25,000	\$25,000	\$25,000
Groundwater	Extraction System	not included	\$50,000	not included	\$50,000
	Pretreatment System (incremental to leachate)	not included	\$75,000	not included	\$75,000
	Off-Site Disposal	not included	\$43,000	not included	\$43,000
	Monitoring	\$150,000	\$150,000	\$150,000	\$150,000
	Monitoring Well Maintenance	\$10,000	\$10,000	\$10,000	\$10,000
	Subtotal Annual O&M Cost:	\$625,000	\$693,000	\$530,000	\$698,000
	Contingency (30%):	\$187,500	\$207,900	\$159,000	\$209,400
	Subtotal:	\$812,500	\$900,900	\$689,000	\$907,400
	Professional/Technical Services - Project Management (5%):	\$40,625	\$45,045	\$34,450	\$45,370
	Professional/Technical Services - O&M Technical Support (15%):	\$121,875	\$135,135	\$103,350	\$136,110
	Institutional Controls:	\$10,000	\$10,000	\$10,000	\$10,000
	Total Annual O&M Cost:	\$894,000	\$1,101,080	\$836,800	\$1,108,980

PERIODIC COSTS¹

Leachate	Extraction/Pretreatment System Decommissioning	\$150,000	\$150,000	\$150,000	\$150,000
Landfill Gas	Collection System Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Monitoring Network Decommissioning	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Extraction System Decommissioning	not included	\$150,000	not included	\$150,000
	Monitoring Network Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Subtotal Decommissioning Cost	\$400,000	\$550,000	\$400,000	\$550,000
	Contingency (30%):	\$120,000	\$165,000	\$120,000	\$165,000
	Subtotal:	\$520,000	\$715,000	\$520,000	\$715,000
Various	5-Year Reviews	\$65,000	\$65,000	\$65,000	\$65,000
Various	Remedial Action Report	\$130,000	\$130,000	\$130,000	\$130,000

Notes

¹Decommissioning and Remedial Action Report costs occur at Year 30. 5-Year review costs occur at Years 5, 10, 15, 20, and 25. Includes 30% contingency.

**SUMMARY OF ESTIMATED CAPITAL, ANNUAL O&M, AND PERIODIC COSTS
(LEACHATE/GROUNDWATER T&D SCENARIO, 0% AGENCY OVERSIGHT)
NORTH SANITARY LANDELL
DAYTON, OHIO**

Page 3 of 4

Environmental Media	Alternative No.:	2a	2b	3a	3b
	Disposal Area 1, 2, 3, 5 Cap:	SW Cap	SW Cap	Alternate SW Cap	Alternate SW Cap
	Groundwater:	Monitoring	Extraction	Monitoring	Extraction
	Process Options				

CAPITAL COSTS

Waste and OPBWA Soil	Disposal Area 4 Waste Relocation	\$1,537,080	\$1,537,080	\$1,537,080	\$1,537,080
	Disposal Area 4 Post-Excavation Sampling	\$25,000	\$25,000	\$25,000	\$25,000
	OPBWA Waste and Soil Consolidation	\$7,650	\$7,650	\$7,650	\$7,650
	OPBWA Post-Excavation Sampling	\$2,000	\$2,000	\$2,000	\$2,000
	Cap Disposal Areas 1, 2, 3, 5	\$9,840,217	\$9,840,217	\$6,645,923	\$6,645,923
	Stormwater Management Facilities	\$250,000	\$250,000	\$250,000	\$250,000
	Valleycrest Drive Re-Opening	\$180,750	\$180,750	\$180,750	\$180,750
NAPL	Recovery Systems at NSL-54L and NSL-55L	\$25,000	\$25,000	\$25,000	\$25,000
Leachate	Extraction System	\$794,750	\$794,750	\$794,750	\$794,750
	Collection Tank	\$50,000	\$50,000	\$50,000	\$50,000
Landfill Gas	Collection and Monitoring System	\$764,000	\$764,000	\$764,000	\$764,000
	Energy Recovery Devices	not included	not included	not included	not included
Groundwater	Monitoring Network Expansion	\$150,000	\$150,000	\$150,000	\$150,000
	Extraction System	not included	\$276,000	not included	\$276,000
	Collection Tank (incremental to leachate)	not included	\$75,000	not included	\$75,000
Subtotal Capital Cost:		\$13,626,447	\$13,977,447	\$10,432,153	\$10,783,153
Contingency (30%):		\$4,087,934	\$4,193,234	\$3,129,646	\$3,234,946
Subtotal:		\$17,714,381	\$18,170,681	\$13,561,799	\$14,018,099
Professional/Technical Services - Project Management (5%):		\$885,719	\$908,534	\$678,090	\$700,905
Professional/Technical Services - Remedial Design (6%):		\$1,062,863	\$1,090,241	\$813,708	\$841,086
Professional/Technical Services - Construction Management (6%):		\$1,062,863	\$1,090,241	\$813,708	\$841,086
Institutional Controls:		\$25,000	\$25,000	\$25,000	\$25,000
Total Capital Cost:		\$20,750,826	\$21,284,697	\$15,892,305	\$16,426,176

ANNUAL O&M COSTS

Waste	Cap	\$25,000	\$25,000	\$25,000	\$25,000
	Stormwater Management Facilities	\$25,000	\$25,000	\$25,000	\$25,000
NAPL	Monitoring/Removal	\$5,000	\$5,000	\$5,000	\$5,000
Leachate	Extraction System	\$50,000	\$50,000	\$50,000	\$50,000
	Off-Site T&D	\$1,629,360	\$1,629,360	\$1,997,280	\$1,997,280
Landfill Gas	Collection and Flaring	\$50,000	\$50,000	\$50,000	\$50,000
	Monitoring	\$25,000	\$25,000	\$25,000	\$25,000
Groundwater	Extraction System	not included	\$50,000	not included	\$50,000
	Off-Site T&D	not included	\$2,154,960	not included	\$2,154,960
	Monitoring	\$150,000	\$150,000	\$150,000	\$150,000
	Monitoring Well Maintenance	\$10,000	\$10,000	\$10,000	\$10,000
Subtotal Annual O&M Cost:		\$1,969,360	\$4,174,320	\$2,337,280	\$4,542,240
Contingency (30%):		\$590,808	\$1,252,296	\$701,184	\$1,362,672
Subtotal:		\$2,560,168	\$5,426,616	\$3,038,464	\$5,904,912
Professional/Technical Services - Project Management (5%):		\$128,008	\$271,331	\$151,923	\$295,246
Professional/Technical Services - O&M Technical Support (15%):		\$384,025	\$813,992	\$455,770	\$885,737
Institutional Controls:		\$10,000	\$10,000	\$10,000	\$10,000
Total Annual O&M Cost:		\$3,082,202	\$6,521,939	\$3,656,157	\$7,095,894

PERIODIC COSTS¹

Leachate	Extraction/Tank System Decommissioning	\$150,000	\$150,000	\$150,000	\$150,000
Landfill Gas	Collection System Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Monitoring Network Decommissioning	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Extraction System Decommissioning	not included	\$150,000	not included	\$150,000
	Monitoring Network Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
Subtotal Decommissioning Cost		\$400,000	\$550,000	\$400,000	\$550,000
Contingency (30%):		\$120,000	\$165,000	\$120,000	\$165,000
Subtotal:		\$520,000	\$715,000	\$520,000	\$715,000
Various	5-Year Reviews	\$65,000	\$65,000	\$65,000	\$65,000
Various	Remedial Action Report	\$130,000	\$130,000	\$130,000	\$130,000

Notes

¹Decommissioning and Remedial Action Report costs occur at Year 30. 5-Year review costs occur at Years 5, 10, 15, 20, and 25. Includes 30% contingency.

**SUMMARY OF ESTIMATED CAPITAL, ANNUAL O&M, AND PERIODIC COSTS
(LEACHATE/GROUNDWATER T&D SCENARIO, 9% AGENCY OVERSIGHT)
NORTH SANITARY LANDFILL
DAYTON, OHIO**

Page 4 of 4

	Alternative No.:	2a	2b	3a	3b
	Disposal Area 1, 2, 3, 5 Cap:	SW Cap	SW Cap	Alternate SW Cap	Alternate SW Cap
Environmental Media	Groundwater:	Monitoring	Extraction	Monitoring	Extraction
	Process Options				

CAPITAL COSTS

Waste and OPBWA Soil	Disposal Area 4 Waste Relocation	\$1,537,080	\$1,537,080	\$1,537,080	\$1,537,080
	Disposal Area 4 Post-Excavation Sampling	\$25,000	\$25,000	\$25,000	\$25,000
	OPBWA Waste and Soil Consolidation	\$7,650	\$7,650	\$7,650	\$7,650
	OPBWA Post-Excavation Sampling	\$2,000	\$2,000	\$2,000	\$2,000
	Cap Disposal Areas 1, 2, 3, 5	\$9,840,217	\$9,840,217	\$6,645,923	\$6,645,923
	Stormwater Management Facilities	\$250,000	\$250,000	\$250,000	\$250,000
	Valleycrest Drive Re-Opening	\$180,750	\$180,750	\$180,750	\$180,750
NAPL	Recovery Systems at NSL-54L and NSL-55L	\$25,000	\$25,000	\$25,000	\$25,000
Leachate	Extraction System	\$794,750	\$794,750	\$794,750	\$794,750
	Collection Tank	\$50,000	\$50,000	\$50,000	\$50,000
Landfill Gas	Collection and Monitoring System	\$764,000	\$764,000	\$764,000	\$764,000
	Energy Recovery Devices	not included	not included	not included	not included
Groundwater	Monitoring Network Expansion	\$150,000	\$150,000	\$150,000	\$150,000
	Extraction System	not included	\$276,000	not included	\$276,000
	Collection Tank (Incremental to leachate)	not included	\$75,000	not included	\$75,000
Subtotal Capital Cost:		\$13,626,447	\$13,977,447	\$10,432,153	\$10,783,153
Contingency (30%):		\$4,087,934	\$4,193,234	\$3,129,646	\$3,234,946
Subtotal:		\$17,714,381	\$18,170,681	\$13,561,799	\$14,018,099
Professional/Technical Services - Project Management (5%):		\$885,719	\$908,534	\$678,090	\$700,905
Professional/Technical Services - Remedial Design (6%):		\$1,062,863	\$1,090,241	\$813,708	\$841,086
Professional/Technical Services - Construction Management (6%):		\$1,062,863	\$1,090,241	\$813,708	\$841,086
Institutional Controls:		\$25,000	\$25,000	\$25,000	\$25,000
Total Capital Cost:		\$22,345,120	\$22,920,058	\$17,112,867	\$17,687,805

ANNUAL O&M COSTS

Waste	Cap	\$25,000	\$25,000	\$25,000	\$25,000
	Stormwater Management Facilities	\$25,000	\$25,000	\$25,000	\$25,000
NAPL	Monitoring/Removal	\$5,000	\$5,000	\$5,000	\$5,000
Leachate	Extraction System	\$50,000	\$50,000	\$50,000	\$50,000
	Off-Site T&D	\$1,629,360	\$1,629,360	\$1,997,280	\$1,997,280
Landfill Gas	Collection and Flaring	\$50,000	\$50,000	\$50,000	\$50,000
	Monitoring	\$25,000	\$25,000	\$25,000	\$25,000
Groundwater	Extraction System	not included	\$50,000	not included	\$50,000
	Off-Site T&D	not included	\$2,154,960	not included	\$2,154,960
	Monitoring	\$150,000	\$150,000	\$150,000	\$150,000
	Monitoring Well Maintenance	\$10,000	\$10,000	\$10,000	\$10,000
Subtotal Annual O&M Cost:		\$1,969,360	\$4,174,320	\$2,337,280	\$4,542,240
Contingency (30%):		\$590,808	\$1,252,296	\$701,184	\$1,362,672
Subtotal:		\$2,560,168	\$5,426,616	\$3,038,464	\$5,904,912
Professional/Technical Services - Project Management (5%):		\$128,008	\$271,331	\$151,923	\$295,246
Professional/Technical Services - O&M Technical Support (15%):		\$384,025	\$813,992	\$455,770	\$885,737
Institutional Controls:		\$10,000	\$10,000	\$10,000	\$10,000
Total Annual O&M Cost:		\$3,312,617	\$7,010,335	\$3,929,619	\$7,627,336

PERIODIC COSTS¹

Leachate	Extraction/Tank System Decommissioning	\$150,000	\$150,000	\$150,000	\$150,000
Landfill Gas	Collection System Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
	Monitoring Network Decommissioning	\$50,000	\$50,000	\$50,000	\$50,000
Groundwater	Extraction System Decommissioning	not included	\$150,000	not included	\$150,000
	Monitoring Network Decommissioning	\$100,000	\$100,000	\$100,000	\$100,000
Subtotal Decommissioning Cost:		\$400,000	\$550,000	\$400,000	\$550,000
Contingency (30%):		\$120,000	\$165,000	\$120,000	\$165,000
Subtotal:		\$520,000	\$715,000	\$520,000	\$715,000
Various	5-Year Reviews	\$65,000	\$65,000	\$65,000	\$65,000
Various	Remedial Action Report	\$130,000	\$130,000	\$130,000	\$130,000

Notes

¹Decommissioning and Remedial Action Report costs occur at Year 30. 5-Year review costs occur at Years 5, 10, 15, 20, and 25. Includes 30% contingency.

From: Stamp, Vince
Sent: Friday, January 14, 2011 3:51 PM
To: Maarsen, Yolande
Subject: FW: Valleycrest - Draft Responses to Comments and FS Report

ARC

From: Shoemaker, James [mailto:James.Shoemaker@daytonohio.gov]
Sent: Friday, January 14, 2011 3:39 PM
To: jbuyers@craworld.com; mikes@demaximis.com
Cc: Scott DuBoff; Simmons, Michele
Subject: RE: Valleycrest - Draft Responses to Comments and FS Report

John and Mike,

Michelle Simmons and I have reviewed the revised FS report and response letter to OEPA that accompanied John's January 12 email. At several points the response letter states (Response to General Comment #6, Response to Specific Comment #38, etc.) that Section 4.1 of the FS report has been revised to refer to "pretreatment and discharge to an on-site infiltration impoundment or infiltration gallery" as contingent disposal options for extracted leachate and groundwater. Please note that such infiltration structures are not acceptable alternatives for management of extracted leachate and groundwater at the Valleycrest site given its very close proximity to Dayton's primary well fields (as an aside, I should also note that the language in question appears in the FS report, Section 4.1.2a, p. 54, as previously-existing discussion rather than revised language). Needless to say, Michelle and I are available to discuss this matter with you, and please call either of us with any questions.

Regards,
Jim

Jim Shoemaker, Hydrogeologist
Dayton Dept. of Water
320 W. Monument Avenue
Dayton, OH 45402
Phone: (937) 333-3727
Fax: (937) 333-2833
E-Mail: jim.shoemaker@cityofdayton.org

More information about the City of Dayton at:



From: Stamp, Vince
Sent: Friday, January 14, 2011 3:51 PM
To: Maarsen, Yolande
Subject: FW: Valleycrest - Draft Responses to Comments and FS Report

PRC

From: Shoemaker, James [mailto:James.Shoemaker@daytonohio.gov]
Sent: Friday, January 14, 2011 3:39 PM
To: jbuyers@croworld.com; mikes@demaximis.com
Cc: Scott DuBoff; Simmons, Michele
Subject: RE: Valleycrest - Draft Responses to Comments and FS Report

John and Mike,

Michelle Simmons and I have reviewed the revised FS report and response letter to OEPA that accompanied John's January 12 email. At several points the response letter states (Response to General Comment #6, Response to Specific Comment #38, etc.) that Section 4.1 of the FS report has been revised to refer to "pretreatment and discharge to an on-site infiltration impoundment or infiltration gallery" as contingent disposal options for extracted leachate and groundwater. Please note that such infiltration structures are not acceptable alternatives for management of extracted leachate and groundwater at the Valleycrest site given its very close proximity to Dayton's primary well fields (as an aside, I should also note that the language in question appears in the FS report, Section 4.1.2a, p. 54, as previously-existing discussion rather than revised language). Needless to say, Michelle and I are available to discuss this matter with you, and please call either of us with any questions.

Regards,
Jim

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More information about the City of Dayton at:

